DOCUMENT RESUME

ED 028 298 08 VT 008 183

By-Brandon, George L., Ed.

Research Visibility. Research in Vocational and Technical Education.

Bureau No-BR-7-0633
Pub Date Feb 69
Grant-OEG-2-7-070633
Note-12p.
Journal Cit-American Vocational Journal; v44 n2 p41-52 Feb 1969
EDRS Price MF-$0.25 HC-$0.70
Descriptors-*Bibliographies, Curriculum Development, Educational Planning, Educational Programs, *Educational Research, Effective Teaching, Research Problems, *Research Reviews (Publications), Teacher Education, *Technical Education, *Vocational Education

Nine research reviews in this issue in vocational and technical education, organized under these topics: (1) Research on Research, which reviews the October 1968 issue of "Review of Educational Research" devoted to vocational education, and a publication on a research priorities planning model, (2) Seminars and Institutes on Research, which summarizes five reports on professional gatherings devoted to research and curriculum development, research planning, students' selection of a vocational education program, Manpower Development and Training Act program findings, and program development, and (3) Other Studies, which includes a study on the effects of directive vs. non-directive teachers and a design to forecast new types of industrial technicians. "Plain Talk," a continuing column by the author, exhorts the vocational research movement to become involved in the totality of the challenge facing the field. The bibliography lists 24 other reports related to these topics. (EM)

ED 028298

RESEARCH VISIBILITY
is / Application / Dissemination

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

Research in Vocational and Technical Education

VOCATIONAL EDUCATION is *discovery* . . . During the brief history of this dissemination project, *Research Visibility* editors have emphasized key words which, in their opinions, characterize the nature and dynamics of vocational and technical education: *people, service* and *opportunity*. The *discovery* keynote of this issue of *RV* places particular emphasis upon the importance of the *quest* for new knowledge, the basic *curiosity* of professional personnel, and the motivation spirit and challenge of *inquiry*. And the *discovery* motive is not reserved for researchers and the sophisticated research process. Historically, vocational education has been rich in its potential for assisting students at all levels in the discovery of themselves and bringing their talents to more full fruition—talents which have not been too discernible to many educators and academicians.

To some extent vocational education legislation has traditionally included provision for research. Since passage of the Vocational Education Act of 1963, vocational research as a late bloomer has a great deal to show for its efforts despite the varying degrees of satisfaction expressed for it. One illustration of this fact is noted in the October 1968 issue of *Review of Educational Research* (Vol. XXXVIII, No. 4, American Educational Research Association), portions of which are reviewed in this issue of *RV*. Jerome Moss, Jr., of the University of Minnesota, as chairman of the AERA Committee on Vocational, Technical and Practical Arts Education, assisted by 13 leaders in research, has consolidated a report which is "directed to researchers and potential researchers and attempts to provide a constructive evaluation of significant projects in order to open new research vistas for the reader."

It is *RV*'s opinion that researchers (and others interested in research) will not only find an interesting review and documentary in the *Review*, but also a different organization and problem treatment by the Committee. Inasmuch as the last *Review* dealing with vocational education was published in October 1962 (Vol. XXXII, No. 4), the new publicaton is, in a sense, an informal inventory and possible barometer of the research activity since the Vocational Education Act of 1963 and perhaps of the shape of things to come. The summarization chapter, "The Past is Prologue," of Chairman Moss indicates a research milestone and some achievements:

> This has been a special six-year period for research in vocational technical, and practical arts education. For the first time, because of the passage of the Vocational Education Act of 1963, appreciable amounts of funds were made available for research-development-diffusion activities across the total spectrum of problem areas in the field. The profession began the slow tooling-up process necessary to produce qualitative changes in educational programs through systematic research-related activities; a cadre of qualified personnel was

TABLE OF CONTENTS

TOPIC ONE: Research on Research 42
Review of Research, p. 42 / Research Priorities in Techincal Teacher Education, p. 43.

TOPIC TWO: Seminars and Institutes on Research 44
Seminar on Research and Curriculum Development, p. 44 / Conference on T&I Teacher Education, p. 44 / Choice of Vocational Education as an Educational Opportunity. Research Planning Conference, p. 45 / MDTA Experimental and Demonstration Findings, p. 45 / Seminar on Agricultural Education, p. 47.

TOPIC THREE: Other studies 48
Effectiveness of Directive Teachers Versus Non-Directive Teachers, p. 48 / Research Design To Forecast Demand for New Types of Technicians in an Industry, p. 49.

PLAIN TALK 50

BIBLIOGRAPHY 51
Studies reported in this issue / additional studies / document sources.

VT008183

EDITOR'S NOTE

Research Visibility is a research project of the American Vocational Association. The purpose is to give visibility to significant research: experimental, demonstration and pilot programs; upgrading institutes, seminars and workshops; and other leadership development activities for teachers, supervisors and administrators. The *Research Visibility* report synthesizes important projects which have been reviewed, selected and analyzed for their value to vocational, technical and practical arts educators, guidance personnel, and other leaders in education, manpower and related fields. A composite bibliography of significant research and development materials is included.

The project is cooperatively financed by the American Vocational Association and a Vocational Education Act of 1963 grant (OEG 2-7-070633, project 7-0633; "Synthesis and Application of Research Fundings in Vocational Education").

George L. Brandon, professor in residence (Pennsylvania State University) is editor of *Research Visibility*. He is assisted in the preparation of these reports by Research Assistant Anne Ware.

As Research Visibility is prepared under a U. S. Office of Education grant, it is not included in the American Vocational Journal copyright.

formed and enlarged; the status of verified knowledge was assessed; professional organizations began to take cognizance of the importance of encouraging research-related efforts; and a network of special agencies was created to help stimulate, coordinate and conduct research-development-diffusion activities.

The Moss and Company report is not the sole reporter of vocational research and development progress. Director Robert E. Taylor and A. J. Miller, Ohio State University Center, and Co-Director Gerald G. Somers, University of Wisconsin's Center for Studies in Vocational and Technical Education, supply statistical and descriptive evidence of growth in the discovery process. In an informal report to *RV*, Director Taylor indicates the following general activities and accomplishments of the Ohio State Center:

National Research, Development and Leadership Seminars. Number of activities—114, with a total attendance of 4,220, and an organization representation of 50 state departments of education and 250 institutions of higher education.

Collaborative efforts—Research and Leadership Development activities. Number to date—47, with representation of 13 state departments, 24 colleges and universities, 5 community colleges, 3 professional associations, and 2 others.

New collaborative efforts. There are 39 pending.

National Leadership Activity participants. 122 state directors, 728 state supervisors, 1,514 teacher-educators. 1,097 local administrators and instructors, and 759 others.

Number of Center publications. 117.

Number of publications sold. 26,375.

Program Areas and Abstracts of Project Activities, 1968-69 (mimeo), supplied to *RV* by Aaron J. Miller, also of the Ohio State Center, indicates the Center's six major program areas which provide a focal point for its staff interaction and planning: (a) state leadership of vocational-technical education, (b) curriculum development, (c) teacher-education program description, (d) vocational-technical education for the occupationally disadvantaged, (e) vocational development and adjustment, and (f) the change process in vocational-technical education. Each project is briefly described by an abstract which indicates the title, principal investigator, duration, purpose, objectives, contribution to education, and procedures. The publication indicates an interesting and active year ahead for the staff and that segment of the vocational community which is involved in the ongoing program of the Center.

Report 1968—Center for Studies in Vocational and Technical Education, Industrial Relations Research Institute, The University of Wisconsin, Madison (see bibliography section of this issue) by Co-Directors J. Kenneth Little and Gerald G. Somers, shows in 91 pages the various activities of the Wisconsin Center. The publication describes the various aspects of the Center, now in its fifth year of operation. In addition to a description of the center staff, its advisory committee and reference unit, *Report 1968* indicates the nature of the research activities (labor market information, training of the unemployed and disadvantaged, evaluation, comparative studies of training and labor market behavior, community and political factors affecting vocational education, and vocational staffing).

The work of Center graduate students is shown, in addition to the numerous conferences which distinguish the focal points and interests of the Center in relation to description of the publications effort— (*Journal of Human Resources, Newsletter, IRRI Report,* reprint series, conference proceedings, RCU reports, faculty publications, and those which are planned. It is obvious that the Center has enjoyed an active and productive year.

TOPIC I: Research on Research

See Bibliography for information on availability of complete studies

Review of Educational Research: Vocational, Technical and Practical Arts Education. Jerome Moss, Jr., and others. American Educational Research Association, Washington, D.C. October 1968.

This publication reviews the literature for the six-year period since the October 1962 issue of *Review of Educational Research*, which was also devoted to vocational, technical, and practical arts education. This *Review* is divided into chapters by problem area and is considered to be representative of well-designed studies that have a wide applicability, give better understanding to practical or theoretical questions, and provide better techniques for education and research.

Three of the chapters will be treated in detail in forthcoming issue of *Research Visibility*—"Program Evaluation," by John K. Coster and Loren A. Ihnen of North Carolina State University; "Staffing," by Harland E. Samson, University of Wisconsin; and "Curriculum Development," by Lloyd J. Phipps and Rupert N. Evans of the University of Illinois.

Chapter I of the *Review*, "Social and Philosophical Framework," was prepared by Elizabeth M. Ray of Pennsylvania State University. The Vocational Education Act of 1963 provided the philosophical framework for developments since that time. Several of the important research studies of the 1960s are discussed in light of their contribution and explanation of the new emphasis which has been placed on preparing students for the world of work: Grant Venn's *Man, Education and* Work, 1964; Jacob J Kaufman's *The Role of the Secondary Schools in the Preparation of Youth for Employment*, 1967; Max U. Eninger's *The Process and Product of Technical and Industrial High School Level Vocational Education in the United States*; and James S. Coleman's *Equality of Educational Opportunity*, 1966.

Chapter II, "Manpower Supply and Demand," prepared by Jacob J. Kaufman and Anne F. Brown, is a discussion of the interaction of the supply of and demand for labor, the theory of manpower supply and demand, manpower requirements, research requirements for manpower analysis, and labor force projections. Conclusions are that, although methods are not yet refined, it is possible to project training and educational requirements to meet demands that will be placed upon labor. Thus, emphasis is placed upon manpow-

er analysis as a tool for educational planning, with the warning that it should be utilized only as an approximate guideline since such analysis is not yet perfected.

Some of the major contributing research studies were Norman Medvin's "Occupational Job Requirements: A Short Cut Approach to Long Range Forecasting," 1967; Gerd D. Wallenstein's *Fundamentals of Technical Manpower Planning*, 1966; Garth L. Mangum's "The Development of Manpower Policy 1961-65"; Solomon Barkin's "Issues and Research Needs Relative to Manpower," 1967; and James A. Scoville's "The Development and Relevance of U.S. Occupational Data," 1966.

Chapter III, "Career Development," was prepared by W. Wesley Tennyson. His comments utilize the research studies of Donald E. Super, *Floundering and Trial After High School*, 1967; David J. Weiss, *The Measurement of Vocational Needs*, 1964; John D. Krumboltz and Wade W. Schroeder, "Promoting Career Planning Through Reinforcement," 1965; John L. Holland, "Major Programs of Research on Vocational Behavior," *Man in a World at Work* (edited by Henry Borow) 1964; and Warren D. Gribbons and Paul R. Lohnes, *Career Development*, 1966.

Daniel L. Householder prepared the chapter titled, "Techniques and Modes of Instruction," which reviews studies of the problems of teaching vocational, technical and practical arts education. He mentions the article by David C. Bjorkquist, "The Relative Effectiveness of Scale Models and Pictorial Drawings in Learning Orthographic Projections," 1966. Other studies in this area were David J. Pucel's "The Subsumption Theory of Meaningful Verbal Learning and Retention Applied to Information Sheets," 1966; Jerry Streichler's *Review and Synthesis of Research in Industrial Arts Education*, 1966; and Hester Chadderson and Alyce M. Fanslow's *Review and Synthesis of Research in Home Economics Education*, 1966.

Chapter VI, "Organization and Administration," was prepared by Allen Lee and Herbert M. Hamlin. Some of the pertinent studies they reviewed were Harold T. Smith's *Education and Training for the World of Work*, 1963; *The Current Status of State Level Organization*, by J. Chester Swanson, 1967; "A Review of Research in the Administration and Supervision of Industrial Education," by Jerome Moss, Jr., 1965; and *Flexibility for Vocational Education Through Computer Scheduling*, by Dwight W. Allen, 1966.

Research Priorities in Technical Teacher Education: A Planning Model. Aaron J. Miller. The Center for Vocational and Technical Education. The Ohio State University, Columbus. 1967.

In this document Miller presents an analysis of the general area of technical education which provides a framework for further inspection of specific parts of this educational system. It is the anticipated purpose of this document to "serve to structure, clarify and, hopefully, 'trigger' new research and development efforts related to this critical area of teacher education." Miller defines technical education as "a program of planned and integrated classroom and laboratory experiences designed to prepare a technician for entry into a cluster of jobs in some field of technology . . . these curricula are generally of post-high school level and are based on the knowledge of science and/or mathematics associated with that field of technology."

Miller analyzes the system of technical teacher education in terms of four aspects: (a) role of the technical teacher, (b) selection and recruitment of technical teachers, (c) programs (with implications for placement) for training technical teachers, and (d) evaluation of technical teachers. Each of these areas is discussed in terms of pertinent questions relevant to problem solutions and a review of relevant literature.

The final chapter contains suggestions for future research and development activities that Miller feels may provide answers to those questions which were left unanswered by the literature review. Two examples of these suggestions are contained in the following paragraphs.

1. *Determination of Present Sources of Technical Teachers.* Purpose: To determine the various sources of present technical teachers to gain insights into future sources for teacher recruiting.

Examine, categorize and itemize current sources of technical teachers to determine where they come from, their educational background and their past occupational experience. Sample both public and private technical institutes, community colleges and area vocational schools in surveying the backgrounds of these teachers.

Develop profiles for the several types of technical teachers based upon their past experience, training, education, and other relevant background data.

Evaluate the relative effectiveness of these profile groups and sources of teachers by some predetermined criteria.

2. *Determination of Employment Criteria for Technical Education Teachers.* Purpose: To determine the employment criteria for technical teachers at the various program levels.

Determine the employment criteria and/or certification requirements of the state departments of vocational education for technical education teachers.

Determine the employment criteria as expressed by the various institutions employing technical teachers.

Determine any incongruity between employment criteria at the high school and the post-high school level; employment criteria in institutions subject to the regulations of state certification and institutions and organizations not subject to these regulations; and employment criteria as expressed by institutions and actual qualifications of teachers being employed.

Keeping Abreast of CAI. Current news and developments in computer assisted instruction is periodically reported by *Entelek* in "Entelek Box Score of CAI Programs." For instance in Vol. III, No. 8, *Entelek* reports the recommendation of the influential Committee for Economic Development that, "The missing link in education is development research as it is practiced in industry," and advocates the implementation of such innovations as CAI, PI and closed-circuit TV. The newsletter is published by Entelek Inc., 42 Pleasant St., Newburyport, Mass. 01950.

TOPIC TWO: Seminars and Institutes on Research

See Bibliography for information on availability of complete studies

Report of a National Vocational-Technical Education Seminar on Research and Curriculum Development, Feb. 7-11, 1966. Herschel T. Lester, Jr. University of Georgia, Athens.

The purpose of this seminar was to advise vocational-technical education leadership of existing research methods believed to be useful in controlling curricula variables. The seminar utilized an inter-disciplinary approach to research in order to take advantage of individuals with various competencies.

Lester feels there are four ways to avoid waste of human resources in our country today: (a) educational programs must be made more flexible; (b) curriculums must be personalized; (c) continuous and constant counseling must be made available; and (d) personal help must be offered for problems which are only indirectly related to school work.

Twenty-three consultants, 38 participants and 3 observers were in attendance at the seminar. Eleven of the consultants presented the papers which make up the major content of this report. This seminar was one of six conducted by the University of Georgia, the American Vocational Association, Cornell University, and the U.S. Office of Education.

The discussion of Norman J. Wood, University of Georgia, "The Interpretation of Economic Data," described some of the major types of economic research (historical research, the nature of our economic institutions, the current performance of our economy, economic forecasting, and public policy questions). He also described the Consumers' Price Index and the measurement of unemployment in terms of the collection and analysis of data.

Raymond Payne, University of Georgia, presented a paper titled, "A Look at Social Class," in which he gave a general treatment of social class and social stratification as it is being approached by sociology, social psychology and cultural anthropology.

Selz C. Mayo, North Carolina State University, spoke on the "Relationships of Community Environment to the Vocational Education Curriculum." He gave attention to the image of vocational education in the community, the image of adults with respect to additional education, the quality of the community educational facility and services, and the social stratification system.

Joseph C. Bledsoe, University of Georgia, discussed "Educational Psychology and the Curriculum," with emphasis on the following: (a) the scope of psychological research in education; (b) the conditions necessary for evaluating curriculum research; (c) the need for new approaches in research; (d) complexity of curriculum evaluations; and (e) inadequacy of dependence of objective data alone.

Harry E. Anderson, Jr., University of Georgia, discussed "Statistical Models in Curriculum Development Studies." Joseph R. Hooten, Jr., also of the University of Georgia, presented a paper titled, "The New Mathematics: A Pattern for Curriculum Reform." Other papers presented by members of the professional staff of the University of Georgia were "Curriculum Development and Evaluation in English," by Many J. Tingle; "The Anthropology Curriculum Project at the University of Georgia as a Model for Curriculum Development: Practical Problems," by Marion J. Rice; and "General Suggestions for Writing Research Proposals," by Warren G. Findley, David S. Bushnell, U.S. Office of Education, described "The Demand for Curriculum Revision in Vocational Education."

Report of a National Invitational Research Planning Conference on Trade and Industrial Teacher Education, May 23-27, 1966. Calvin J. Cotrell. The Center for Vocational and Technical Education. The Ohio State University, Columbus. 1966.

This conference was held to stimulate joint state and institutional interest in trade and industrial teacher education research and development. Objectives were:

1. To review previous research in trade and industrial teacher education.
2. To review and analyze the professional literature for trade and industrial teacher education.
3. To review innovations in general teacher education.
4. To review innovative programs and practices in trade and industrial teacher education.
5. To review trade and technical teacher education in the military service.
6. To consider projections for trade and industrial teacher education.
7. To develop guidelines for the improvement and expansion of trade and industrial teacher education.
8. To identify research and development programs needed to improve and expand trade and industrial teacher education.

Twenty-two national leaders in trade and industrial teacher education and related areas participated in this conference. Background papers were presented which described projected teacher education programs.

John L. O'Brian and Carl J. Schaefer presented a survey of the literature in trade and industrial teacher education, dividing it into five major sections for discussion purposes: (a) Recruitment; (b) The Philosophy of Teacher Education; (c) Teacher Competencies; (d) Program Organization; (e) In-Service Offerings; and (f) The Picture, or a discussion of degrees earned in trade and industrial education as reported by the Department of Health, Education and Welfare.

O. H. Beaty presented an analysis of sources of trade and industrial teachers, based on a survey of 35 state supervisors of trade and industrial education and 32 state supervisors of technical education. Edward K. Hankin gave an analysis of trade and industrial teacher education professional literature, with emphasis on instructional methods and aids, test construction, shop management, and safety. In-

cluded in this discussion were certain selected desirable competencies and a bibliography of 403 related textbooks and other reference books and articles. Durwin M. Hanson also gave an analysis of the professional literature in the areas of trade analysis, course construction and curriculum materials development. Gordon G. McMahon presented an analysis of the literature as it pertains to history and philosophy, shop planning, and industrial and public relations.

James F. Peterman discussed the development of technical training, teacher training, and school administration procedures in the U.S. Navy. Dwight W. Allen and David B. Young discussed the use of television recordings in the preparation of secondary school teachers at Stanford University, and included a description and the cost of different kinds of television recording equipment that were used in the program.

David Allen discussed some innovations in trade and industrial teacher education, comparing the changes in recruitment and selection of teachers, education curriculum structure, sequence and content of education courses, methods of presenting teacher education instruction, and methods of evaluating the education programs. He also presented a comparison of teacher certification requirements in various states, and the type and amount of professional teacher education preparation required by various states. Implications of computerized instruction, flexible scheduling, and projections of trade and industrial teacher education were discussed by George L. Brandon, Dwight W. Allen and Melvin L. Barlow, respectively.

Twenty-one research and development suggestions were agreed upon by the participants as having high priority. The top five in this list were as follows:

1. Identify and evaluate practices of preservice and inservice trade and industrial teacher education in the nation.
2. Prepare monographs to fill voids in the professional literature for trade and industrial teacher education.
3. Evaluate the teacher education principles developed during the planning conference.
4. Identify the unique features of trade and industrial and technical teacher education and the elements common to all vocational and technical teacher education programs.
5. Conduct a study to establish minimum standards for teacher education for a state.

Choice of Vocational Education as An Educational Opportunity. Report of a Research Planning Conference, Fort Washington, Penn., Sept. 8-9, 1967. Edited by Theodore J. Cote and others. The Center for Vocational and Technical Education. The Ohio State University. 1967.

The American Personnel and Guidance Association Commission on Guidance and Vocational Education is charged with improving the dialogue between vocational education and guidance. This conference was one of the Commission's first projects. Preliminary to the conference, a research plan was developed to deal with factors which influence youth in the selection of vocational education as a means of vocational development.

Participants in the conference were members of the Commission and representatives of the Vocational Education Research Coordinating Units from Pennsylvania, New Jersey and Delaware. The conferees discussed the initial research plan and developed guidelines for its improvement. Emphasis was given to developing a research model for use in various school districts.

Two papers were presented during the conference which indicated reactions and recommendations to the existing research model. Martin R. Katz, Educational Testing Service, Princeton, N. J., and Alan G. Robertson, director, Division of Evaluation, New York State Education Department, presented these papers.

The objectives of the initial research plan were (a) to study in-depth the environmental obstacles and impediments in communities that discourage students from choosing vocational education; (b) to develop a model to assess these obstacles and impediments; and (c) to propose solutions for overcoming the obstacles determined to be important by this study. The design of the plan would, thus, involve an in-depth study and collection of data, the development of a conceptual model and the recommendation of solutions to obstacles.

As a result of the conference the research plan was modified by changing the terminology to speak of "influences and factors" rather than "impediments and obstacles." In addition, the first objective was expanded, as follows:

To identify and evaluate the degree of intensity of these influences and factors that impinge positively or negatively on the student's consideration and/or selection of vocational education as an alternative opportunity in working toward a career or occupational goal.

a. To consider the impact of certain variables (individual, school, community, family) in terms of the identification of these factors and influences, and the manifestation of degree of intensity of these factors and influences.
b. To determine the differential perceptions of significant groups, e.g., 1. guidance personnel, 2. academic teachers, and 3. vocational educators, relative to the factors and influences bearing on the consideration and/or selection by students of vocational education as an educational alternative.
c. To direct special attention to those factors and influences which may lend themselves to modification.

Three alternative methods were suggested: (a) involvement of a vocational school whose students come from several school districts; (b) involvement of several large comprehensive high school districts; and (c) involvement of a comprehensive high school district which has a variety of student-family input variables.

MDTA Experimental and Demonstration Findings: Putting Research, Experimental and Demonstration Findings to Use. Curtis C. Aller and others. Manpower Administration, Department of Labor, Washington, D.C., June 1967.

A multi-agency seminar on the problem of utilization of research findings was held Nov. 28-29, 1966, in Washington, D. C. The thirty participants were involved in manpower research, experimentation and demonstration, and during

this seminar they discussed the nature of diffusion of innovation and defined the barriers to it. This booklet contains their suggested ways to facilitate knowledge utilization. It also contains a position paper of the Bureau of Research, U.S. Office of Education, 1966; and a description of current activities of some federal agencies in dissemination and utilization.

Reproduced below in their entirety are the suggestions which resulted from this seminar. The participants note that not all the suggestions are relevant to each type of demonstration activity, and that the degree of application is closely linked to availability of resources and the objectives of the particular program.

"1. Stimulate good research proposals by (a) streamlining grant and contract procedures, including providing a small planning stipend after approval of an *informal proposal*, and by (b) inviting and *reaching out* for submission of proposals in a given field to assure desired complementary studies and needed coverage of given subjects, not just waiting for proposals to be submitted.

"2. Prepare and distribute to potential users comprehensive but succinct *periodic reviews of the state of the art/knowledge* in given fields. In these reviews, point up gaps which might be filled by Research and Development (R & D) or Experimental and Demonstration (E & D) projects.

"3. Ask and try to answer continuously, from inception to completion of a project, the questions of its *aims and ultimate use* of results. Whom is the demonstration intended to influence? What are the obstacles to the good use of results, and how can these obstacles be overcome? What criteria should be used to evaluate the results? When these questions have been *tentatively answered*, either before the project begins or at the start, bring in representatives of the identified program group who might be expected to utilize the findings (in addition to requiring that each proposal include recommendations by the sponsor on how to implement the findings of his project). The representatives will meet with the project staff and funding agency program officer, for *consultative reactions* to the tentative answers. These persons may well be helpful with practical advice not only regarding possible improvement of the project, but also regarding appropriate ways of interesting potential users or colleagues in their own field.

"4. Provide for *continuous interaction* between grantor or contractor and grantee, from the beginning of the project through the period of dissemination and efforts to apply results. This may imply more technical training for Washington agency staff; more staff devoted to keeping in contact with projects and stimulating use of results; better interagency coordination; development of a clearinghouse and data retrieval system similar to that new in use by the Office of Education.

"5. Provide in the project methodology a built-in component on *reporting procedures* and statistical data which would permit subsequent evaluation and utilization.

"6. Summarize findings in *separate, brief, nontechnical,* and very readable reports, in addition to the full technical reports. Get *criticisms* of at least the summary reports from key representatives of potential users *before they are put in final form. Then* disseminate them widely to members of the various groups of potential consumers.

"7. Conduct *seminars* in conjunction with *site-visits,* where potential users can discuss the innovation, perhaps see it and "feel" it as something alive, and consider its applicability to other situations. The participants could have small group discussions of ways to adopt and perhaps to improve the innovation. Encourage each participant to tell about innovations in his own facility. Thus, each participant can become a *giver as well as a receiver* of information.

"8. Reduce wasteful proliferation and fragmentation of research, demonstrations, services and research utilization efforts by *developing better interagency exchanges* to discuss policies and problems as well as projects already underway or needed to help fill gaps in knowledge. Agencies also could work out common as well as unique strategies for utilization of promising findings. The more complex our society becomes and the more specialized the focus of different groups, disciplines and agencies, the greater the need for system integration to relate the parts to the whole.

"9. *Replicate* important demonstrations as a means of accumulating more experience and, through reaffirmation, giving them more impact.

"10. Identify and *recruit key practitioners* in various localities to apply the innovation to their own settings. Their example might be expected to *foster adoption* among others with whom they are influential. To facilitate application of the innovation, provide human links or *change agents* who are thoroughly familiar with it to serve as consultants to the institution which is interested in exploring, adopting or adapting the innovation. Use the project staff, where appropriate, for this change agent and consultant function.

"11. Invite attention to the potential *rewards* of adopting the innovation—for example, winning approval from key persons or sources, gaining prestige, reducing costs, improving services—so that the potential user can identify them with his self-interest.

"12. Obtain policy commitment from funding agencies to the idea that dissemination and utilization functions are an integral part of their research program. Implement this commitment by providing each research-support operating division *with a dissemination and utilization staff* of its own, in addition to an overall Bureau of Office capability. This operating division staff would work with agency program officers and sometimes with the demonstration project staffs to see that their procedures contain evaluation, dissemination, and implementation components. Unless steps are taken to promote implementation after research and development, and unless someone is responsible for seeing that such steps are taken, considerable lag can be expected.

"13. Evaluate the *financial considerations* involved in putting project findings to use; e.g., the extent to which the project might supplement or support existing, ongoing practices or services; the cost-benefits involved; the distinctions between the costs of adopting the critical or essential elements of a project and adding those which are marginally valuable."

Report of a National Seminar on Agricultural Education Program Development and Research, Aug. 9-13, 1965. Robert E. Taylor, The Center for Vocational and Technical Education, The Ohio State University, Columbus.

The objective of this seminar was to give state leaders in vocational agriculture and vocational education a chance to formulate plans to improve state programs of research and development. Seminar participants made no attempt to develop policies or guidelines for program development and research; instead, their time was devoted to examining various approaches. The 68 participants were particularly interested in the leadership role of state staffs in the following areas, as presented by Taylor:

1. Developing plans for comprehensive, continuing state programs of research and development.
2. Utilizing outside resources to assist in program development and research.
3. Planning, conducting and evaluating pilot programs.
4. Facilitating the adoption of new programs in agricultural education.
5. Identifying sources of funds for program development and research activities.
6. Reviewing and planning regional research programs.

Thirteen of the consultant staff members made presentations during the course of the seminar. Lloyd J. Phipps, chairman, Department of Agricultural Education, University of Illinois, spoke on "Developing Comprehensive State Programs of Research and Development." Commenting on the impact which automation in farming has had on manpower needs for production, Phipps said it will create a need for new educational services in agriculture and a "Pandora's Box" of demands for research, development and evaluation in agricultural education. It will be necessary for agricultural education research and development programs to adjust to the resulting changing manpower requirements, with emphasis on discovering the best way to utilize the talents of vocational agriculture teachers, influencing the American public opinion in favor of vocational and technical education, and realizing the importance of nonproduction agricultural job opportunities. Some specific programs needed in research and development are described briefly below.

1. Change the image of vocational agriculture so that the public realizes that vocational agriculture has an important role to play in the schools.
2. Learn how to expand agricultural education to include teaching skills in plant and animal science and related disciplines.
3. Learn how to teach agriculture as it applies to the everyday affairs of living.
4. Learn how the talents of vocational agriculture teachers can be effectively utilized in the schools' total vocational education program.
5. Learn how the talents of nonagricultural professional personnel such as other vocational teachers, guidance counselors, and nonvocational teachers, and administrators, can be utilized to ease the burden on agriculture teachers.
6. Learn how to effectively serve disadvantaged youth and adults.

Phipps also presented some specific recommendations for organization of research and development, some of which are (a) establishment of research and development committees at all institutions which prepare vocational teachers; (b) earmarking of time in agricultural education staff meetings for the planning and analysis of research and development projects; (c) regular scheduling of research and development meetings between teacher-educators and supervisors and teacher representatives: (d) encouragement of vocational agriculture teacher associations at state and national levels to establish research and development committees; and (e) encouragement of action research by teachers.

Duane M. Nielsen, director, Educational Resources Development Branch, U.S. Office of Education, spoke on "Opportunities and Responsibilities for Research and Development." He stated that in our rapidly changing society, "the supreme challenge to research and development in agricultural education is to innovate, experiment and demonstrate so that programs may more effectively serve a broadened clientele." He went on to discuss the reorganization of the U.S. Office of Education and to give a progress report on the fiscal 1965 activities under Section 4(c) of the Vocational Education Act of 1963.

Nielsen presented seven priority areas for research and development concentration in agricultural education. They are (a) program evaluation; (b) curriculum development and experimentation; (c) personal and social significance of work; (d) personnel recruitment and development; (e) program organization and administration; (f) adult and continuing education; and (g) occupational information and career choice.

John K. Coster, University of Nebraska, presented some remarks on "Developing Proposals for Funding Research and Development Projects." He pointed out that proposals which would receive consideration under Section 4(c) of the Vocational Education Act of 1963 would be those which would have the widest possible impact on the program of vocational and technical education for the nation.

Coster discussed in detail the important elements of a sound proposal that should be clearly stated: (a) the development of the problem; (b) the innovative qualities of the proposal; (c) the significance of the study for vocational and technical education; (d) the details of the design of the study; (e) an evaluation of the technique of collecting data to be used in measuring the effectiveness of the program and the selection of criterion measurement instruments; (f) the adequacy of personnel and facilities; and (g) the economic efficiency of the project. He concluded his remarks by presenting some guidelines for writing proposals, including several points to avoid.

Glenn Z. Stevens, The Pennsylvania State University, presented a summary of "Promising Research Directions in Off-Farm Agricultural Occupations." Information is now available on jobs that exist, anticipated employment trends and amounts of education needed for job entry. Stevens suggests four major directions for research:

1. The classification of job titles by fields of activity and the grouping of subject matter areas by communalities of knowledge, skills and human relations abilities.

2. The testing and evaluation of instructional materials on a continuing basis.

3. A survey of "supporting education" to determine its impact; *e.g.*, whether to teach distribution methodology, communications skills or human relations areas as an integral part of a product knowledge course or as separate courses.

4. The evaluation, recordkeeping and reporting systems in placement and adult counseling areas.

TOPIC THREE: Other Studies

See Bibliography for information on availability of complete studies

A Study of the Effectiveness of Directive Versus Non-Directive Vocational Teachers as a Function of Student Characteristics and Course Format. Bruce W. Tuckman. Rutgers—The State University, New Brunswick, N. J. 1968.

Vocational education typically is oriented toward individual instruction. This study was undertaken to ascertain answers to the questions of (a) with whom to use directive or non-directive teaching techniques, and (b) in what course organization. One purpose of this study was to collect data to indicate if teachers should receive training in directive and non-directive techniques in order to be able to use them when applicable to particular students. Tuckman also sought to discover if teachers should vary techniques to match the various learning environments, e.g., use one technique in the shop or laboratory and the other technique in the classroom.

The stated objectives of the study were as follows:

(1) To develop and validate a measure of teacher directiveness.

(2) To test the following hypotheses: (a) Highly directive-oriented students perform better in courses under directive teachers; they prefer such teachers and are more satisfied in their courses; (b) Non-directive-oriented students prefer non-directive teachers, perform better in their courses and receive more satisfaction from these teachers; (c) Directive-oriented student effects will come mainly from the classroom setting, while the non-directive-oriented student effects will come mainly from the shop setting.

The first phase of this study included the development of a *definition* of teacher directiveness and non-directiveness, a *measure* of teacher directiveness and a demonstration of the *validity* of the instrument. The second phase was concerned with the use of this device to test the hypotheses given above.

After a thorough study of pertinent literature, the following behaviors were associated with *directive* teaching, indicating that the directive teacher is structured, absolute and formal:

Structure
(1) formal planning and structuring of the course
(2) minimizing informal work and group work
(3) structuring group activity when it is used
(4) rigidly structuring individual and classroom activity
(5) requiring factual knowledge from students based on absolute sources

Interpersonal
(1) using absolute and justifiable punishment
(2) minimizing the opportunity to make and learn from mistakes
(3) maintaining a formal classroom atmosphere
(4) maintaining a formal relationship with students
(5) taking absolute responsibility for grades

Inasmuch as validity and reliability of student rating scales are generally known to be high, Tuckman designed the Student Perception of Teacher Style scale (SPOTS) to obtain a description of teacher behavior. The SPOTS scale contains 32 items which describe classroom behavior and was completed by 363 students in 22 classrooms. To validate the student rating, an observer rating scale was developed, based on the operational definition of directive teaching given above. Two observers completed an independent set of ratings on each cooperating teacher after a full class period of observation.

To test the hypotheses, 514 male students (all of whom were in their junior or senior years and pursuing an occupational course of study) filled out a revised SPOTS on 40 male teachers. Of these teachers, 24 were chosen for inclusion in the study (12 taught shop courses and 12 taught nonshop courses). Based on their revised SPOTS scores, these teachers were assigned to either a directive or a non-directive group. Two weeks before the end of the school year, data for three dependent measures were collected which described course satisfaction, teacher preference and course grade. The students also completed the Interpersonal Topical Inventory and the F-Scale (measurements of personality) in order that they could be classified as abstract or concrete information processors and an authoritarian or non-authoritarian in attitude.

Tuckman reached the following conclusions:

1. In an absolute sense, teachers of vocational subjects were *more non-directive* than teachers of non-vocational subjects.

2. Students were more satisfied with and preferred non-directive teachers to directive teachers, both in the vocational and non-vocational areas. However, students' preference for non-directive teachers was more marked among vocational teachers than among non-vocational teachers.

3. Students earned higher grades from non-directive non-vocational teachers than they did from directive non-vocational teachers. (Grades earned from the two groups of vocational teachers, however, were comparable.)

4. Abstract students showed a marked preference for non-directive vocational teachers over directive ones while concrete students showed approximately equal preference for the two groups.

5. Non-authoritarian students showed more marked course satisfaction and higher grades under non-directive

non-vocational teachers as compared to directive teachers than did authoritarian students. That is, non-authoritarian students showed greater discrimination and a more differentiated outcome in favor of non-directive teachers than did their more authoritarian counterparts.

6. Students preferred and were more satisfied with vocational teachers than non-vocational teachers but they earned slightly higher grades from non-vocational teachers.

Based on his conclusions, Tuckman offers the following four recommendations:

1. Teacher education should offer more information about non-directive teaching; there should be opportunity to utilize the information.

2. Teacher education should emphasize the importance of utilizing non-directive and directive methods as they pertain to the individual student. Tuckman feels this approach is particularly appropriate in vocational schools where more emphasis should be given to individual differences.

3. Non-vocational subject courses should be modified to make them more meaningful and palatable in order to overcome the general dissatisfaction of the vocational student.

4. Research and development related to individual student differences in various learning environments should be encouraged.

Research Design To Forecast Demand for New Types of Technicians in an Industry. John L. Fulmer, Robert E. Green and Paul B. Han, Georgia Institute of Technology, Atlanta. February 29, 1964.

In order for skilled manpower to keep pace with the increasingly rapid effects of technological advances it is important to be able to forecast the future demand for such manpower. Such forecasting is vital in order to effectively anticipate training demands. The research design developed in this study was planned to detect, define and forecast the need for emerging new technicians in any given area. Another objective of this design was to provide information relevant to the upgrading and displacement of skilled workers, and about new types of skilled workers needed to support the new technician.

The authors conclude that new technicians can be detected only through the use of detailed personal interviews with company executives who are concerned with technological development. Two questionnaires were developed for use in such interviews: one is nonstructured and deals with current technological problems, the other is structured and deals with job specification details and training requirements for new technicians.

Forecasting the need for new technicians can also be accomplished through the use of personal interviews with top technical personnel in order to determine major technological problems and their relationship to skill requirements in the different industries. This should be followed by a questionnaire survey of a larger number of firms in order to test the ability of top management in a particular industry to recognize its need for new technicians.

As part of Phase One, the authors utilized data from the Georgia Skill Study and obtained specific results for the state's textile industry through the use of the intensive interviews mentioned above. Top management and technical personnel of several textile firms in Georgia were interviewed during the summer and fall of 1962.

To obtain a summarization of the major technological problems in the industry the interviewees were presented with a form, "Analysis of New Types of Technical Workers for a Sample of Companies," in which they were asked to choose which of six alternative advantages would accrue to their respective companies as a result of exploiting technological change. The six advantages presented were as follows:

1. Cost savings from newer processes.
2. First entry into the market with improved products or new products.
3. Gain in market share from newer products.
4. High rate of profits from rising volume.
5. Competitors being kept off balance by faster adoptions of technological change.
6. Pride or organization from faster adoption of technology.

In addition, they were requested to check off a list of 12 technological changes already affecting the textile industry (obtained from previous interviews with a smaller sample of textile firm representatives), noting those which affected their own companies. Two examples are given below.

- The trend toward expensive, complex machinery, involving electronic mechanisms and often also hydraulic or pneumatic, which enlarge the problem of preventive maintenance.
- The growing importance of the computer for data processing and management controls. In time, computer use for production planning will grow.

The same respondents were asked to list any additional technological problems they had. The original list of 12 was accepted as being representative of technological problems now affecting the textile industry.

Phase One also involved the identification of new types of technicians. Eleven plant job titles of new technicians were determined, one of which is the Chemical Process Control Technician who operates between staff chemists and ma-

chine operators in testing or analyzing chemicals and materials entering and leaving process.

A field investigation of the problem was conducted from July to September 1963, during which time Fulmer and Green sought the most effective ways to communicate information on technological problems and job specifications of new technicians to various types and sizes of textile companies, and to obtain information through questionnaires about the need for new technicians in these firms.

They contacted 29 companies through personal interviews, single letter with questionnaire and materials, and a two-phase letter. The usual methods of follow-up were performed. The response rate was as follows: (a) personal interviews—79 percent; (b) single letter—27 percent; (c) two-phase letter—75 percent. They concluded that a response is often dependent upon gaining the attention of a company president, which can be done by having recognized statewide sponsors of the study. Because of the complexity of communication, multi-unit firms should be handled by personal interview. When using an initial contact letter, it should state the objectives of the study and show clearly how the company can benefit by responding.

PLAIN TALK

AS IT IS VERY EVIDENT from previous issues of *Research Visibility*, the monthly chatter from *"Plain Talk"* seeks to stimulate *communication*, particularly that communication about research and its relationship to vocational and technical education. At the outset it is realized that some of *RV's* communication may be a repetition of information which may have been appeared elsewhere; or it may be a restatement of emphasis previously made; and finally, it is not above making an observation or airing a grievance in reflection of an undesirable condition which may inhibit or thwart the research and development process. Hopefully, in this issue none of these communication modes are predominant and will assume the upper hand.

The Vocational Research Movement in Transition. Begging final evaluation of research productivity which will never come, it is felt that the development of research in vocational and technical education is momentarily in a state of flux. The VEA of 1963 has been superseded by the VEAs of 1968. What has our research community learned (and produced) in the half-decade? What are the implications for research and development of VEA '68? To what extent is our research manpower in the position to fully exploit and mount research provisions for a pervasive program? Are we adequately organized to accomplish the research task?

A number of wholesome influences, evidence, alleviations (possibly some solutions) may be apprized on the *plus* side of the ledger. We are older, consequently more experienced, and wiser. Through the influence of institutions, agencies, research centers, research coordinating units, professional research organizations, etc., there is better organization of effort and unity of purpose. We have more than cut our baby teeth on grantsmanship. We have possibly learned that research does not exist in a vacuum, as a separate entity, any more than do other aspects, or legislative provisions, of the acts which support our program.

Of course, there is a *negative* side of the ledger. Undoubtedly, a long and troublesome list of *minus* anecdotes might make up its historical record, but the job to be done disparages the preservation of errors and calculated risks.

It is hoped that in the here-and-now and in the preparation for new achievements of the new vocational education legislation that the research segment of the vocational community will become involved in the *totality* of the challenge. The involvement is both individual and group, and professional throughout. Among many professional research groups which can be highly instrumental, AVERA (American Vocational Education Research Association) and the Department of Research and Evaluation of the American Vocational Association should be rallying points for the organizational thrust. The latter, especially, as a newcomer to AVA organization and activity with its close tie of affiliation to AVA divisions, has unlimited potential if fortified with interest, hard work and the formulation of an on-going program of around the calendar activity of research and its intimate relationship to *evaluation.*

A Tip of the RV Hat to the AVERA Beacon. The *Beacon* is helping to close the credibility gap in communications. It reports interesting developments and problems of the junior-community college, highlights of VEA 1968, bio-medical curriculum development studies, pilot revision of technical curricula in Georgia AVTS's, and member support of a new AVERA research publication, *Vocational Education Research Quarterly*, to be launched in the near future. The *Beacon* also introduces a recent newcomer to the educational publications field:

The Junior College Research Review, a monthly report on research findings and recommendations, is compiled each month by the ERIC Clearinghouse for Junior College Information located at the University of California at Los Angeles. In the new publication are listed abstracts of documents, bibliographies, and specialized materials, in the community college field. Subscriptions may be obtained by addressing the ERIC Clearinghouse for Junior College Information, UCLA, Los Angeles, California, 90024.

How Are Your International Vocational Education Horizons? The November-December 1968 issue of *ILO Panorama* is interesting (and important) literature to the vocationalist. Among its announcements of new ILO (International Labour Office) publications are *Labour and Automation: Bulletin No. 7, The ILO and Safety and Health of*

Workers, and *The ILO and Youth*, and there are full length articles about factory-made houses, Pindorama and the "danger down the mine." *Panorama* is free for the asking at ILO Regional Offices, United Nations, 345 E. 46th St., New York, N.Y., 10017 (limited distribution only), or from the Washington Branch Office, 917-15th St., N.W., Washington, D.C. 20005.

Two publications from the Swedish Council for Personnel Administration, *Research Projects 1968*, and *Research, Consultation Information* will be of value to researchers, consultants and educators interested in leadership and supervisory development. *The PA Council* has been active since 1952 in the dissemination of knowledge of the behavioral sciences and personnel administration. Both publications describe the work of the Council and may be requested from the PA-Council, Box 5157, Stockholm 5, Sweden.

Now It's the "Convergence Technique" in Research Planning and Strategy. If our readers have not already seen evidence of this new technique in *Management Science* of April 1967, and the September 1968 issue of *Educational Researcher*, official newsletter of the American Educational Research Association, there is more about the convergence technique in the October 1968 issue of the AERA Newsletter. Briefly, the technique is one which is borrowed from the National Cancer Institute for a USOE Bureau of Research trial under a grant with Phi Delta Kappa. The "promising tool for the strategic planning of a complex research effort" will be put to work on basic research of reading, but that the technique has strong implications for all educational research is the hypothesis of the Phi Delta Kappa planning grant. The essence of the new methodology is *strategy of research program* instead of emphasis upon research *tactics*. In relation to our current stage and need of research planning in vocational and technical education, several statements from biomedical researchers Baker and Carrese *Management Science* (April 1967) are illustrative:

> The reviews associated with the allocation of resources for the support of medical research grants focus primarily on tactical segments, with less emphasis given to program strategies. In this framework, most of the review process utilites criteria for assessments that are suitable for the evaluation of tactical quality, but not for stertegic relevance, primarily because each grant application is reviewed individually and usully in scientific disciplinary frame-of-reference. That a project is judged to be excellent from a scientific discipline frame-of-reference does not necessarily mean that it is of strategic significance from a program standpoint· Conversely, a project that may have a lower priority in the specialized discipline frame-of-reference may be critical for program accomplishment because the data on products produced are vitally needed for the total program implementation, or because the work interrelates closely with one or more other projects.

Is the dilemma of vocational education research and research administration similarly described?

MARCH ISSUE . . . Next month, *Research Visibility* will focus its attention on "The Vocational Education Curriculum."

BIBLIOGRAPHY (For ordering information, see "Document Sources" listed on next page.)

TOPIC ONE: Research on Research

"Review of Educational Research: Vocational, Technical, and Practical Arts Education." Jerome Moss, Jr., and others. American Educational Research Association, Washington, D.C. October 1968, Vol. XXXVIII, No. 4. 142 pages. Single copy available for $3.00 from AERA, 1126-16th St., N.W., Washington, D.C. 20036. Bulk copy discount: 2-9 copies, 10 percent; 10 or more copies, 20 percent.

"Research Priorities in Technical Teacher Education: A Planning Model." Aaron J. Miller. Center for Vocational Education, Ohio State University, Columbus. October 1967. 56 pages. (ERIC # ED 016 815, MF-$0.25, HC-$2.32.)

TOPIC TWO: Seminars and Institutes on Research

"Report of a National Vocational-Technical Education Seminar on Research and Curriculum Development, Feb. 7-11, 1966." Herschel T. Lester, Jr., 1966. 145 pages. University of Georgia. Athens. (ERIC # ED 018 592, MF-$0.75, HC-$5.88.)

"Report of a National Invitational Research Planning Conference: Trade and Industrial Teacher Education May 23-27, 1966." Calvin J. Cotrell, The Center for Vocational and Technical Education, The Ohio State University, Columbus. 1966. 197 pages. (ERIC # ED 011 043, MF-$0.75, HC-$7.88.)

"Choice of Vocational Education as an Educational Opportunity: Report of a Research Planning Conference, Fort Washington, Pa., Sept. 8-9, 1967." Theodore J. Cote and others. The Center for Vocational and Technical Education. The Ohio State University, Columbus. 1967. 57 pages.

"MDTA Experimental and Demonstration Findings: Putting Research, Experimental and Demonstration Findings to Use." Curtis C. Aller and others, U.S. Department of Labor, Manpower Administration, Washington, D.C. June 1967. 80 pages. (Available at no charge from the Manpower Administration Information Office, Washington, D.C. 20210. Also available: ERIC # ED 016 067, MF-$0.50, HC-$3.28.)

"Program Development and Research: Report of a National Seminar on Agricultural Education Program." Robert E. Taylor, Center for Vocational and Technical Education, Ohio State University, Columbus. Aug. 13, 1965. 191 pages (ERIC # ED 011 036, MF-$0.75, HC-$7.64.)

TOPIC THREE: Other Studies

"A Study of the Effectiveness of Directive Versus Non-Directive Vocational Teachers as a Function of Student Characteristics and Course Format." Bruce W. Tuckman. Rutgers University, New Brunswick, N.J. Sept. 1968. 120 pages. (See future *Research in Education* for availability.)

"Research Design To Forecast Demand for New Types of Technicians in an Industry." John L. Fulmer and others. Georgia Institute of Technology, Atlanta, Ga. Feb. 19, 1964. 90 pages. (CFSTI # AD 602 431, MF-$0.65, HC-$3.00.)

Additional Studies – Not Reported In This Issue

TOPIC ONE: Research on Research

"Review of Research in Vocational Technical Teacher Education." Jerome Moss, Jr., Minnesota Research Coordinating Unit in Occupational Education, Minneapolis, Minn. Sept. 1967. 42 pages. (ERIC # ED 016 803, MF-$0.25, HC-$1.76.)

"Review of Educational Research: Vocational, Technical, and Practical Arts Education." William B. Michael and Others. American Educational Research Association, Washington, D.C. Oct. 1962. Vol. XXXII, No. 4 76 pages. Single copy available for $1.50 from AERA, 1126-16th St., N.W., Washington, D.C. 20036. Bulk copy discount: 2-9 copies, 10 percent, 10 or more copies, 20 percent. All orders should be accompanied by payment.

"Review of Research on Creativity." Marshal Hahn. Minnesota Research Coordinating Unit in Occupational Education, University of Minnesota, Minneapolis, Minn. Sept. 1968. 28 pages. (For ERIC # see future *Research in Education*.)

"Sponsored Research in American Universities and Colleges." Edited by Stephen Strickland, American Council on Education. Washington, D.C. 1968. 260 pages. For sale, $5.00 from American Council on Education, 1785 Massachusetts Ave., N.W., Washington, D.C. 20036.

"Gaps and Overlaps in Institutional Research." John E. Roueche American Association of Junior Colleges, Washington, D.C. Nov. 1967. 5 pages. (ERIC # ED 015 744, MF-$0.25, HC-$0.28.)

"Research Needs in Vocational-Technical Education." E. Wayne Courtney. Stout State University, Menomonie, Wis. April 1966. 53 pages. (VT 005 190, for ERIC # see future *Research in Education*.)

"Research in Vocational Education." Frederick Bertolaet. Research Training Institute, Denver, Colo. December 7, 1966. 16 pages. (ERIC # ED 017 658, MF-$0.25, HC-$0.72.)

TOPIC TWO: Seminars and Institutes on Research

"North Atlantic Regional Research Conference in Agricultural Education, Conference Proceedings, Ithaca, Nov. 5-7 1963." State University of New York., Ithaca, N.Y. 1963. 50 pages. (ERIC # ED 017 619, MF-$0.25, HC-$2.08.)

TOPIC THREE: Other Studies

"A Bibliography of Published and Unpublished Vocational and Technical Education Literature." Corplan Associates, Chicago, Ill. Illinois Research and Development Coordinating Unit. June 1966. 225 pages. (ERIC # ED 018 531, MF-$1.00, HC-$908.)

"Improving Research in Business Education. Delta Pi Epsilon Monograph 105." Paul S. Lomax and W. Harmon Wilson. 1962. 27 pages. (ERIC # ED 016 857, MF-$0.25, HC-$1.16.)

"Report Nov. 1968." J. Kenneth Little and Gerald G. Somers. Center for Studies in Vocational & Technical Education, University of Wisconson, Madison. Nov. 1968. 100 pages. (For availability, see future *Research in Education*.)

"Annual Report, November 1967." J. Kenneth Little and Gerald G. Somers. Center for Studies in Vocational & Technical Education, University of Wisconson, Madison. Nov. 1967. 57 pages. (ERIC # ED 017 684, MF-$0.25, HC-$2.36.)

"Study of Agriculturally Related Occupations in Selected Counties of Idaho." Robert W. Richmond, Idaho Occupational Research Coordinating Unit. October 1967. 69 pages. (ERIC # ED 016 825, MF-$1.50, HC-$2.84.)

"Health Occupations Education: Abstracts of Iowa Research, 1960-1968." Thomas F. Tibbitts, Iowa Research Coordinating Unit, Des Moines, Iowa. 1968. 41 pages. (VT 007 154, for ERIC # see March 1969 *Research in Education*.)

"Concepts, Strategies, and Priorities for Research in Educational Manpower: A Symposium on Educational Manpower. Final Report." National Education Association, Washington, D.C. June 1967. 71 pages. (ERIC # ED 013 778, MF-$0.50, HC-$2.92.)

"A Study to Determine the Educational Interests of Adults in Sioux City, Iowa, Who Did Not Complete High School." (Ed.D. thesis) Cox, Robert P. South Dakota University, Vermillion. Aug. 1965. Available from University Microfilms, Ann Arbor, Mich. Order No. 66-1876. Microfilm $3.00, Xerography $8.80. 197 pages.

"Research Studies With Implications for Adult Education, Mountain-Plains Region, 1945-1966." Burrichter, Arthur, Jensen, Glenn. Wyoming University, Department of Adult Education and Instructional Services. March 1967. 34 pages. (ERIC # ED 012 413. MC-$0.50, HC-$3.36.)

"Research and Investigations in Adult Education." ERIC Clearinghouse on Adult Education, Syracuse, N.Y. Summer 1967 (ERIC # ED 012 877, MF-$0.50, HC-$2.64.) 66 pages.

"Aerospace Bibliography. Fourth Edition." National Aeronautics and Space Administration, Washington, D.C. Jan. 1968. 64 pages. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Price: 40 cents.

"Fact Book: Office of Education Programs." Office of Administration, Office of Education, U.S. Department of Health, Education, and Welfare, Washington, D.C. June 1968. 100 pages. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20202. Price: $1.00.

"Manpower Education in a Growing Economy." Robert L. Darcy and Phillip E. Powell. Ohio University, Athens. Aug. 1968. 70 pages. Inquiries about copies should be addressed to: Manpower Education, Division of Research, Copeland Hall, College of Business Administration, Ohio University, Athens, Ohio 45701.

"Research Projects 1968." The Swedish Council for Personnel Administration. 46 pages. Available from Research Department, PA-Council, Box 5157, 102 44 Stockholm 5, Sweden.

"The ILO and Youth." International Labour Organization. 1968. Available free of charge from International Labour Office, Washington Branch Office, 917-15th St., N.W., Washington, D.C. 20005.

"Labour and Automation: Bulletin No. 7; Manpower Adjustment Programmes: Canada, Italy, Japan." 1968. Available from International Labour Office, Washington Branch Office, 917-15th St., N.W., Washington, D.C. 20005. Price: $2.00.

DOCUMENT SOURCES

The material reported on in *Research Visibility* may be obtained from several sources. The source of each publication is indicated in each entry. The key to the abbreviations used there and instructions for obtaining the publications are as follows:

CFSTI—Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151. Copies of reports with this symbol may be purchased for $3 each (paper) or 65 cents (microfiche). Send remittance with order directly to the Clearinghouse and specify the accession number (AD or PB plus a 6-digit number) given in the listing.

ERIC—Educational Resources Information Center, EDRS, c/o NCR Co., 4936 Fairmont Ave., Bethesda, Maryland 20014. Copies are priced according to the number of pages. The MF price in the listing is for microfiche; the HC price is for paper copies. Send remittance with order directly to ERIC-EDRS and specify the accession number (ED plus a 6-digit number) given in the listing. *How to Use ERIC*, a recent brochure prepared by the Office of Education, is available from the Superintendent of Documents, Government Printing Office, Washington, D. C. 20402; the catalog number is FS 5.212.12037; price: 20 cents.

GPO—Government Printing Office. Send orders directly to Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402, with remittance for specified amount.

MA—Manpower Administration. Single copies free upon request to U.S. Department of Labor, Manpower Administration, Associate Manpower Administrator, Washington, D. C. 20210

OTHER SOURCES—Where indicated the publication may be obtained directly from the publisher at the listed price.